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ABSTRACT

The introduction of Direct Broadcasting Satellites (DBS) in the United States sparked both government's regulatory development of domestic DBS services and the communication industry's efforts to implement a commercial DBS system. J. D. Slack's symptomatic causality and technological assessment models help to explain how these practices were encouraged. Both government and industry assumed that (1) implementing a DBS system would satisfy consumer demand for diversified video services, bring improved video service to rural areas, and promote competition in the video market; (2) the technological benefits were inherent in the technology itself; and (3) the technological development was irreversible. The Federal Communications Commission (FCC) used the new technology to justify deregulation. Also the American liberal-pluralistic view of society valued the multiplicity of communication channels, and communication and market research legitimized the purposes of the new technology. However, the notion that freedom in American society underlies the argument of DBS as a new source of channel diversity is a myth because the ultimate consumers of the new communication technology had little involvement in the decision-making process. The FCC has shown no capability of or interest in distinguishing channel diversity from content diversity. Therefore, the notion that DBS is a source of diversity has proved an illusion. (JD)

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Direct Broadcasting Satellite in the United States

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ABSTRACT

Direct Broadcasting Satellite (DBS) in the United States was born with the spirit of minimum regulation and maximum freedom for the enterprise. The paper deals with the regulatory development and the decision-making process of domestic DBS services and traces the communication industry's efforts to implement a commercial DBS system. To understand such practices in the United States, the "Symptomatic Causality" model and the "Technological Assessment" approach, as explained by Jennifer Daryl Slack, are introduced. The paper argues that the United States government and related industry shared an attitude that DBS would be the great benefactor of society. Yet, ultimate consumers of the new communication technology had little chance to be involved in the decision-making process. The paper also argues that it is an illusion to see DBS as a source of diversity.

Introduction

Since communication satellites have been used to move voices, data and broadcasting signals, the idea of distributing television programs directly to homes, bypassing terrestrial, intermediary distribution systems, has interested the American broadcasting industry. Direct Broadcasting Satellite (DBS) delivers television signals from very powerful satellites directly to households, requiring for reception an antenna as small as two feet in diameter.

Active work on DBS services in the United States began in 1974 with the launch of the ATS-6 satellite by NASA in order to experiment with educational television. However, the Federal Communications Commission began studying regulatory matters of commercial DBS near the end of 1979, motivated by a need to plan the assignment of frequencies in the DBS band.[1] Many firms in the communication industry were interested in the possibility of implementing a commercially viable DBS system in the United States. But the short history of DBS in this country has taught bitter lessons to some would-be DBS entrepreneurs.

This paper deals with the FCC's regulatory development of domestic DBS services and traces the communication

industry's efforts to implement a commercial DBS system. The paper also discusses the implications of the regulatory decisions and the industry's efforts to establish DBS. Although it is difficult to distinguish domestic matters from international matters in the field of satellite communication, the scope of this paper is limited to the United States domestic DBS issues.[2]

Before analyzing the regulatory development and the decision-making process of DBS and the industry's activities, it is important to understand the underlying assumptions of such practices in the United States. In discussing the relationship between communication technology and society, scholars have presented simple cause-and-effect models of communication technology and society ranging from Orwellian dystopia to McLuhan's global village. From this perspective, communication technologies are conceived as being autonomous forces that produce direct effects. In policy-making and industry practice, however, the "Symptomatic Causality" model[3] has prevailed, according to Slack. The model is based upon the assumption that technology is neutral; therefore, it is the human beings in the society using the technology who make it either good or bad. According to Mumford, "the machine itself makes no demands and holds out no promises: it is the human spirit that makes demands and keeps promises."[4]

Because of this assumption of neutrality, new technology is easily accepted. Based upon this acceptance, the society develops ways to maximize the benefits and minimize undesirable effects of new technology through rational policy-making and policy-changing. Such an approach is known as "Technology Assessment," according to Slack,[5] and it is consistent with the long-dominant American view that the best decisions are made in a pluralist framework with diverse interests competing against each other on an equal basis.

With the symptomatic causality model and technology assessment approach in mind, the regulatory development of domestic DBS services will now be analyzed.

The Process Of Regulatory Policy For DBS

The United States has participated in the international debate of DBS within the U.N. since late 1960s; however, domestic regulation and policy for DBS did not receive much attention until 1979, when the Communication Satellite Corporation (Comsat) announced its plan to launch a DBS system.

In October 1980, the FCC issued a Notice of Inquiry soliciting comments regarding DBS regulation in five areas: (1) the market for new video programming distribution and its potential implications; (2) spectrum allocation and assignment for the new system; (3) technology and technical standards for DBS; (4) ownership and control requirements; and (5) appropriate regulatory classification for DBS.[6]

Prior to the issuance of the Notice of Inquiry, the FCC produced two staff reports, one dealing with the technical descriptions of DBS,[7] and the other discussing regulatory policy,[8] a report which revealed the FCC's deregulatory inclination.

The Policies Report predicted that by the time DBS went into operation, a much larger amount and wider variety of video programming would be available through expanded cable television, subscription television, multi-point distribution service(MDS), and video discs and cassettes. Based upon this competitive video market condition, the report concluded that most forms of regulation imposed by the FCC upon broadcasters and common-carriers would prove unnecessary or counterproductive. It also recommended that the FCC establish free transferability of licenses, make no rules concerning program content, plus no limits on crossownership with other media, establish no prices or types of services to be offered, and set no technical standards and signal quality for DBS.[9] It was in this kind of laissez-faire environment that the DBS system was born.

On June 1, 1981, the FCC released a Notice of Proposed Policy Statement and Rulemaking, which stated that the establishment of a DBS system would serve the public interest, and therefore, the FCC would begin accepting applications for an interim DBS system.[10] The authorization of DBS service was called "interim" because frequency band

and satellite orbital space allocations were subject to approval by the Regional Administrative Radio Conference (RARC) in 1983.[11]

The FCC set a July 16, 1981, deadline for interim DBS applications and received 13 applicants vying for some 40 channels per time zone.[12] In December 1981, before a Congressional hearing on DBS,[13] industry representatives and interest groups presented their assessments of DBS and voiced their concerns.

Prior to RARC-83 the FCC adopted a Report and Order[14] which established the domestic regulatory policies and rules governing the interim DBS system, and in October 1982, eight companies were given FCC approval to begin development. Presently, only four companies hold DBS licenses.

The FCC and DBS industry saw the new broadcasting technology as the great benefactor of society. The FCC perceived that DBS could provide valuable service to the public because of its ability to serve remote areas, to add more channels which would offer a greater diversity of programming, and to accommodate innovative services such as High-Definition Television (HDTV).[15] Communication regulations in the United States are largely based upon the scarcity of spectrum, and DBS promised to ease this scarcity. The deregulatory movement of the FCC, which guaranteed maximum flexibility to experiment with DBS and imposed no restrictive measures, was challenged by the existing broadcasting industry.

The broadcasting industry contended that the FCC moved too quickly in eliminating regulatory obstacles to new competitors without regard for the economic wellbeing of the established broadcasting industry.[16] Threatened by new competitors armed with deregulation, the National Association of Broadcasters (NAB) asked the court to put aside a 1982 FCC decision that authorized DBS service. The NAB argued that the FCC did not have the legal power to authorize a broadcast service that did not rely on local television stations or cable systems to distribute video signals because such a service would avoid requirements that broadcasters serve the needs of their communities.[17]

Vincent Wasilewski, president of the NAB, testified before a Congressional hearing that the authorization of DBS would constitute a significant departure from the traditional concept of locally based, locally oriented service.[18] He continued:

> Should the service provided by conventional over-the-air broadcasting be degraded by the advent of DBS, no adequate substitute service is seen on today's horizon.[19]

However, FCC chairman Mark Fowler presented a different interpretation of local service:

> It [DBS] may not serve local needs and problems, but it may serve the local needs of the people by providing another source of programming which is not presently available.[20]

In its Report and Order, the FCC rejected the existing broadcasting industry's contention by pointing out that the

authorization of the interim DBS system would not result in any serious effect on existing broadcasters.[21] The U.S. Court of Appeals for Washington, D.C., confirmed that the FCC had legal power to authorize DBS, ruling that the Communications Act of 1934 did not entrench any particular systems of broadcasting:

> Existing systems, like existing licensees, have no entitlement that permits them to deflect competitive pressure from innovative and effective technology.[22]

However, the court overturned the FCC's decision that programmers using a DBS system would be exempted from program content regulations such as equal time law.[23] Currently, television stations are required to abide by such a requirement. One of the reasons for content regulations is that there is an imperfect market structure, e.g., monopoly, which needs governmental intervention to serve the public interest.[24] The recent FCC philosophy of deregulation has emphasized market forces as an effective method for determining public needs. An FCC staff report recommended that applying the programming requirements of the current television license renewal guidelines to DBS would prove counterproductive in a competitive market.

There is an interesting point in the FCC's approach in determining competitiveness of the market, which is a crucial criterion in determining appropriate regulations for DBS. While television stations are judged as a single market, and therefore imperfect, the FCC included general

home entertainment media, e.g., video cassettes and discs, and pay television, which do not need airwaves, in considering the market structure of DBS. The commission also did not take geographical considerations of the competitiveness of the video market. The issue, for the FCC, was not the extent of the availability of media sources within a given community, but the number of sources available across the country. Furthermore, by promising additional channels, the new communication technology justified substantial deregulation.

From its beginning DBS has been a prime beneficiary of the FCC deregulation movement. Although the high cost of entering the DBS business would limit the number of companies that could initiate the service, the Policies Report predicted that there was "no a priori reason to believe a DBS operator will have monopoly power."[25] The FCC indicated that there would be no structural regulation for DBS service. It seems then that the minimum-restriction policy was given to prospective DBS operators as an incentive for entering into the new venture.

Two factors can be identified which motivated this minimum-restriction policy for the DBS system. First, new technology means new business opportunities. In the technology assessment approach, analysis usually begins with the identification of impact areas such as economy. While DBS authorization was pending, the Reagan administration, in

its first major statement of telecommunications policy, urged swift government approval of the new venture.[26] President Reagan wrote in a letter to the American Women in Radio and Television:

> We are urging a free market approach to provide DBS service in the U.S. DBS has the potential to provide valuable openings in the TV marketplace. It represents us with a new era of tremendous creativity and makes possible the expansion of delivery systems and for new programming and increased employment.[27]

The industry was responsive to the matter and Satellite Television Corporation, Comsat's DBS division, alone claimed that it would support up to 23,000 jobs.[28]

The other factor attributed to DBS authorization and regulation was the United States' effort to acquire the most favorable results from the RARC-83 in terms of spectrum and orbital space allocations for DBS. The RARC-83 for Region 2 was held in Geneva during June 13 - July 17, 1983, alloting the frequencies and orbital locations for the 12 GHz broadcasting satellite service among the 32 nations of the Western Hemisphere. The State Department, the National Telecommunications and Information Agency (NTIA), and the FCC were preparing negotiating positions and strategy for the conference. The FCC made it clear that the DBS authorizations were "interim," and subject to the results of RARC-83.

At the hearing on DBS, Congressman Scheuer questioned:

> Doesn't the preconference development of DBS more fully legitimize U.S. needs in the eyes of other nations in North America who are competing for frequency and orbital allocation?[29]

Opinions from the existing broadcasting industry and STC were filed. As one might expect, opinions on the matter were twofold. Irving Goldstein, president of STC, responded that the prompt authorization of DBS systems in this country would lend credibility and substance to the U.S. negotiating position.[30] This view was opposed by the existing broadcasting industry. The NAB argued that actual grants for interim operations may send a negative signals to other countries and could reduce flexibility at the negotiating table.[31]

However, the FCC believed that since it takes a long time for a DBS operator to initiate service after receiving its authorization, waiting to authorize DBS systems until after the RARC-83 would prolong the introduction of DBS service.[32] In approving an interim DBS system before the conference, it was clear that the United States government believed that the authorization would enhance the ability of the nation to negotiate at the conference.

We have seen that DBS system has enjoyed a favorable regulatory climate despite the established broadcast industry's objections to DBS. The DBS system raised two additional regulatory problems that the FCC had to solve: the use of 12 GHz band and regulatory classifications of DBS. At the DBS hearing, terrestrial fixed service (FS) operators filed their complaints about premature allocation of the 12 GHz band that might prevent them from competing in

the video market in the future. Other non-entertainment users of FS and the FS industry voiced their concerns over the loss of the 12 GHz band. They complained that the FCC favored DBS over the existing users in judging the appropriate use for the spectrum.[33]

A DBS applicant, STC, argued that the 12 GHz band had been allocated by international agreement and had to be made available to DBS if the new technology was to develop. It further argued that no other service has a need for 12 GHz spectrum sufficient to outweigh the public benefits that would accrue from DBS.[34] STC proposed that existing non-profit, public service microwave users be fully reimbursed by DBS operators for any costs they incurred in adjusting to the advent of the new satellite technology.[35] The FCC discussed the issue in length in its Report and Order and Notice of Proposed Policy Statement and Rulemaking concluding that "the advantage accruing to the American public from additional video services would far outweigh the costs to existing microwave operators and broadcasters."[36]

Despite 1,700 existing terrestrial private microwave systems in the 12 GHz band[37] the FCC decided that after 1988, the existing FS services should operate on a non-interference basis and undertake all adjustment cost to prevent interference with the DBS service.[38] The anticipation of DBS service overpowered the already established services.

Concerning the regulatory classification on DBS, the FCC gave maximum flexibility to the industry. A DBS applicant could file as a broadcaster, a common carrier, or both, based upon the service it planned to provide.

The policy-making process for DBS system in the United States confirms that symptomatic causality model and the technology assessment approach have dominated, as expected. Ideally it is a rational way of evaluating new technology--the potential merits and demerits of technologies are projected and compared with alternatives. Judgments from various sectors of the society then are passed, exchanged, and negotiated for social action, e.g., policy-making.

Decisions in real life, however, are rarely as rational as this process might suggest. Mosco would agree that technology assessment suffers from its pluralistic perspective that renders largely unproblematic questions about the distribution of power.[39] Pluralism views participants in the process as relative equals, with no single interest in the position to dominate.[40] In practice, according to Mosco, governmental decision-making process serves only a few interest groups and what it really does is offer legitimation.[41]

Through decision-making mechanisms such as the FCC public notice practice and the Congressional hearing, different sectors of the communication industry and interest groups competed with each other with their own self-

interested assessments of the new technology. The FCC's deregulatory inclination was affirmed and the DBS industry acquired what it wanted through the decision-making process. Voices from citizen/consumer groups were not heard. Only the opinions of the interest groups were presented, clashed, and evaluated. It was simply accepted from the beginning that people would benefit by DBS. In the case of the DBS regulatory process, prospective DBS enterprises received every suppport possible from the government. In short, DBS in the United States was born with the spirit of minimum regulation and maximum freedom for the enterprise. How this enterprise is turning out is the concern of the next section of this paper.

The DBS Industry In The United States

Satellite Television Corporation (STC), the first applicant for domestic DBS service, filed its application with the FCC in December 1980 before the Commission formulated a regulatory policy for DBS. STC's proposal, therefore, was not even formally accepted until June 1981 when the FCC issued the Notice of Proposed DBS Policy. During a 45-day cutoff period for the submission of interim DBS applications, 13 additional proposals were filed.[42]

Since the FCC imposed no restriction regarding the type of service, applicants presented a wide range of proposals which revealed the industry's ideas on how commercial DBS service in the United States could be used. Six

applications were denied for filing because they failed to provide specifications for technical standards or the type of service they planned.[43] Eight companies received the FCC's authorization for interim DBS. Each applicant requested multiple channels and all but Western Union proposed to offer a mixture of various services.

Figure1: DBS Licensees and Their Proposals[44]

	Number of Channels	Type of Service*
CBS	3	ACDEGIJ
DBSC	6	HIGJ
Graphic Scanning	2	ABGJ
RCA	6	HI
STC	3	ABEGIJ
USSB	3	ACDFI
Video Sat. Systems	2	ACDEHI
Western Union	4	H

* Key to Proposed service

A: Direct to home (or business)
B: Pay television
C: Advertiser-supported
D: Terrestrial retransmission by broadcasters
E: Terrestrial retransmission by cable systems
F: Terrestrial retransmission by LPTV stations
G: Electronic text services
H: Leased-channel system
I: High definition TV
J: Additional audio services
k: Unspecified

As shown in Figure 1, Many companies wanted to integrate various types of service into a DBS system, from commercial television to electronic text services.

As far as programming was concerned there was nothing new that the new medium was planning to offer. For example, STC's program service would consist of three channels. Although STC claimed to "devote considerable resources to the development and acquisition of high-quality programming in order to supplement, rather than duplicate, what is available on conventional television,"[45] by and large, its program service plan was identical with what was available in the video market.[46] Using three channels simultaneously, STC's programming strategy was characterized by "counterprogramming" and "narrowcasting" which could provide viewers with a wide range of program choices throughout the broadcast day, and which could gather together small groups of viewers who shared a preference for various types of special programming.[47]

United States Satellite Broadcast (USSB), organized by Hubbard Broadcasting, proposed to distribute advertiser-supported programming to independent broadcasters, who would collectively own a big part of the system, and to distribute such programming directly to homes that were unserved or underserved by local broadcasting.[48] In this way, USSB actually proposed to create a fourth network utilizing established independent local broadcasters and without setting up terrestrial relay facilities.

Reviewing proposals for video programming, prospective DBS operators saw the medium could be best used to integrate services provided by conventional television, cable television and pay television. This could be only possible with DBS's capability to carry multiple channels. Besides traditional video and audio, Graphic Scanning proposed to use DBS to provide data communications and teletext services, foreign language dubbing and stereo music programming.[49] Direct Broadcast Satellite Corporation (DBSC) submitted similar proposals.

The mixture of the types of service made it very difficult to classify a DBS operator as a broadcaster, common carrier, or both. RCA and Western Union, which proposed to lease channels, did not want to be regulated as a common carrier[50] but wanted to pick and choose among potential users.

Perhaps the most innovative use planned for DBS was High Definition Television (HDTV).[51] CBS was particularly excited about the possibility of offering HDTV through DBS. However, CBS made it clear that it would preserve the traditional American local television service by distributing an advertiser-supported channel of HDTV signal by satellite to the local stations for terrestrial retransmission.[52] Because HDTV has a different format from traditional television, it would require a different production facility, broadcasting equipment, and, above all,

would make every television set in the United States obsolete. This would be the biggest obstacle for HDTV to be operational in the foreseeable future.

Despite the glossy picture presented by the industry, DBS system as a new commercial venture has suffered so far. Noticing that the industry made little progress in executing their proposals, the FCC required that DBS licensees should show "due diligence" in proceeding with a construction permit for a new satellite system for a proposed venture. After the "due diligence" requirement in 1984, only four of the original eight companies still retain their licenses. They are: USSB, STC, Dominion Video (an affiliate of Video Satellite Systems), and DBSC.[53]

It is worth noting that the companies which proposed to use DBS mainly for leasing satellite channels, RCA and Western Union, withdrew. Today, there are 23 satellites in orbit with 408 C-band and 68 Ku-band transponders. By May 1986, five more satellites with 120 transponders are scheduled to be in orbit.[54] The domestic satellite business already has witnessed that supply is exceeding demand in the satellite transponders market. It seems that those companies felt that the domestic satellite market was saturated enough. Besides, the FCC already had deregulated the nation's commercial satellite operators.

Decisions from wealthier DBS licensees to back out of their plans may raise more questions about the viability of

the DBS system, which requires a very large capital investment. However, there are companies, such as Hughes Communications Galaxy, National Christian Network, and Satellite Syndicated Systems, which still believe in the viability of the DBS system and are waiting to be authorized by the FCC in the second DBS round. Dominion and USSB have requested channels in addition to those already approved.[55]

Out of all the talks and ideas about DBS service, only one company actually offered its service to the public. United Satellite Communications Inc. (USCI), which was not an original DBS licensee, began a five-channel Ku-band DBS service on February 1, 1984.[56] Prudential Insurance owns 51.9 percent of the stock. USCI expected that it would be able to capture 12.9 percent of the households in non-cabled areas, or about 2.3 million subscribers by 1988, with a projected profit of $137 million on revenue of $1 billion.[57]

USCI obtained only 1,000 subscribers in the first four months of service and in September 1984, USCI, STC, and Douglas F. Ruhe and William E. Geissler, the owners of United Press International, agreed to form a partnership to keep USCI alive.[58] The plan failed and on April 1, 1985, USCI went off the air, leaving some 9,000 subscribers.[59]

The disappointing experience of USCI might have alarmed other prospective DBS operators. However, it demonstrated the technical feasibility of using less powerful satellites

to broadcast direct, a move which would cut the cost of operating DBS substantially.[60]

On December 1, 1984, Comsat announced that it was abandoning its effort to launch a DBS system, ending its joint venture with USCI and the owners of UPI. The company's five-year-old effort ended with millions of dollars in losses. It was estimated that Comsat spent about $115 million on its STC unit,[61] including a $70 million payment for satellite construction.[62] Comsat said the company still believes in the potential of the direct satellite-to-home broadcasting business and will keep its permit obtained from the FCC to build the high-powered satellites that were intended for the service.[63]

The DBS system in the United States has withered even before it blossomed. So far, the history of domestic DBS in the United States has been short and unsucessful. The failure could be attributed largely to the fact that DBS service, presented by the industry, offers nothing new to the public. DBS survived the technological feasibility test during the 1970's. Therefore, the communication industry decided, it seems, that since there is a new technology available a new market should be created. Probably the industry saw the 1980's as the period of testing the economic feasibility of DBS. Indeed, DBS was considered by the FCC's chief scientist "not a technical experiment, but rather a marketing experiment."[64]

The communication industry is responding to the problem of an unfavorable DBS market situation with newer technologies. For example, Harris Corporation in Florida is working on a receiver that does not even need a dish.[65] The cable industry also has been trying to scramble the C-band satellite signals of the cable programmers, sell the signals to owners of backyard dishes, and create C-band and Ku-band direct.[66] However, no matter how DBS technology is further developed, the major problem that the industry must solve for a viable DBS system is programming. Cable industry has expanded much in recent years. Cable is available to 70 percent of the nation's 90 million television homes, yet only 35 percent buy cable.[67] If DBS offered more or less the same programming that is now available in the video market, the high cost of launching and subscribing a DBS system would not be justified. Indeed, as a CBS spokesman was quoted, "people don't watch technology, they watch programming and they don't care whether they receive that programming by using an antenna, a dish or a VCR."[68]

Since the technology is available, the industry may work continuously on its potential uses. So far, the DBS system has been a loser in the marketplace. In fact, many ideas of the DBS system were formulated and abandoned by the industry. Except for the case of USCI, the DBS system was tested out in the industry's board rooms, not in the actual marketplace. Ultimate consumers had little chance to be

involved in the process--from formulation to abandonment. In order to survive in the future the DBS industry may need some government regulatory protection. Stanley S. Hubbard of USSB, who wants to establish a fourth network using a DBS system, testified before a Senate hearing:

> The determination of which program services to be carried by cable television systems should be a function of the marketplace and not of government. However, if mandatory carriage of broadcast signals is dictated by the government, then all broadcast service must be treated equally to be fair, and cable television systems should be required to carry one advertiser-supported channel of each DBS system.[69]

Conclusion And Implications

When the technology of DBS was introduced, the United State government and related industry celebrated the technological development. They saw that implementing a DBS system would benefit the public because it would satisfy consumer demand for diversified video services, brings improved video service to rural and underserved areas and promote competition in the video market.[70] Therefore, how well DBS would serve the public interest will depend on the competitiveness of the market.[71] They all conveyed an attitude that DBS, a new communication technology, was the great benefactor of society. The FCC's DBS policy and the industry's activity of implementing a DBS system reflected more fundamentally an attitude perhaps best voiced by Carey and Quirk:

> Technically efficient communications are good, that space has social symbolism that conflicts of ideology and interest can be surmounted by technology.[72]

Ellul has pointed out that all technical progress raises more problems than it solves, tempts us to see the consequent problems as technical in nature, and prods us to seek technical solutions to them.[73] This attitude certainly prevailed in the development of DBS services in the United States. Government and industry alike all shared the benign assumption that the benefits of the new technology are inherent in the technology itself and the technological development is irreversible, therefore, government policy and institutional arrangements should be changed accordingly:

> In almost every case the new technologies open up opportunities for more and better human communication which cannot be fully realized unless we modify in some way the economic and political parameters of the present communications system.[74]

The FCC gladly lifted most of its restrictions to encourage a new communication medium. The new technology was used to justify deregulation. As Mosco argued, deregulation is a euphemism for redistribution of power.[75] Under the banner of deregulation, we can find a redistribution of power away from federal communication agencies, with consumer and general public interest responsibilities, over to the private communication industry.

The American liberal-pluralistic view of society valued the multiplicity of communication channels. It is believed that broadcasting regulation, through its content control and structural control, works to guarantee the diversity of information sources. Under that philosophy, the power comes from a monopoly or oligopoly structure in broadcasting had to be diluted. And it is argued that one way of diluting that power would be to expand the number and variety of voices capable of expressing themselves either within the broadcasting medium or via competitive technologies.[76]

The promise of DBS eliminated one of the old reasons, i.e., scarcity of spectrum, for broadcasting regulation. DBS provided a hope for greater diversity:

> Of the 210 television markets, 179 have four or fewer stations. A four channel DBS system would thus double the over-the-air choices of about half the population. Diversity is clearly a major potential benefits of DBS.[77]

Communication research[78] and market research[79] legitimized the purposes of the new technology. Efforts were made on how to use the most of the new technology. Negative effects of the DBS remained rhetorical and some issues, such as localism, were subject to legal interpretation and court decisions.[80] Indeed, the FCC and the industry did not consider whether the public would be better served by the absence of a DBS system.[81] This technology assessment approach is firmly committed to the credo which Slack identified as "technology is essentially

synonomous with progress."[82] DBS was seen as a remedy to cure scarcity and inadequacy of communication services in remote areas. Many presented the inadequacy of communication services in remote areas to rationalize the establishment the new communication system. However, DBS proposals were directed toward more affluent urban areas like the eastern time zone.

Underlying the argument of DBS as a new source of diversity is the myth of freedom in American society. DBS was added into a source of channel diversity by furnishing new outlets of communication. Yet diversity in content has been neglected. The FCC and the industry have shown no capability of or interest in distinguishing channel diverisy from content diversity. Le Duc aptly pointed out:

> We have looked upon each individual broadcast station as a source of programming diversity. When in fact the station has functioned much as a motion picture theater or record shop. No one would suggest that building more motion picture theaters would create more feature films, and yet this is exactly the hope the FCC has followed in the field of broadcasting."[83]

In this sense, DBS seen as a source of diversity proved to be an illusion. Like the network affiliated broadcasting stations, the role of DBS in the United States is as transmitting towers in space. Williams argued that television started as a system "primarily derived for transmission and reception as abstract process, with little or no definition or preceding content."[84] Indeed, in the case of DBS, "the supply of broadcasting facilities preceded

their content."[85] DBS certainly extends William's observation.

Notes

1. Federal Communications Commission, Annual Report, 1980, p. 82.

2. Domestic satellite operations are subject to international agreements on spectrum and orbital space allocations. Besides this technical agreement, the power of DBS signals, which can easily cross borders, raises international concerns over political, economic, and cultural effects of DBS to which the United States is considering.

3. Slack, J. D. Communication Technologies and Society: Conceptions of Causality and the Politics of Technological Intervention, Norwood, NJ: Ablex Publishing, 1984.

4. Mumford, L. Technics and Civilization, NY: Harcourt, Brace & World, Harbinger, 1963, p.6.

5. Slack, op. cit.

6. FCC, Notice of Inquiry, General Docket No. 80-603, November 3, 1980.

7. Pattan, B. Technical Aspects Related to Direct Broadcast Satellite Systems, FCC Staff Report, September, 1980.

8. Setzer, F. O., Franca, B. A., and Cornell, N. W. Policies for Regulation of Direct Broadcasting Satellites, FCC Staff Report, September, 1980. Hereafter Policies Report.

9. Ibid., p.87.

10. FCC, General Docket No. 80-603, April 21, 1981. Hereafter, Notice.

11. To serve different regions of the world by satellites, orbital space has been divided by the International Telecommunications Union (ITU) into three regions. The U.S. belongs to Region Two, with North and South America, Greenland, and areas in between. Gehrig, J. J. "Broadcasting Satellites - Prospects and Problems," Journal of Space Law, 1975, 3, 25-38, p.31.

12. "Good News, Bad News in DBS Spacerush," Broadcasting, July 20, 1981, p. 23-27.

13. Hearing on Satellite Communications/Direct Broadcast Satellite before the Subcommmittee on Telecommunications, Consumer Protection, and Finance,

97th Congress, First Session, December 15, 1981. Hereafter DBS Hearing.

14. FCC, General Docket No. 80-603, June 23, 1982.

15. FCC, Policies Report, op. cit.

16. "Support of Satellite-To-Home TV Service By President Is A Blow To Major Networks," Wall Street Journal, April 16, 1981, p.12.

17. "Court Approves Satellite TV Service," New York Times, July 25, 1984, p.C22.

18. DBS Hearing, op. cit., p.211.

19. Ibid., p.211-212.

20. Cited in Direct Broadcast Satellites: International Representation and Domestic Regulation, 28th Report by the Committee on Government Operations, 97th Congress, Second Session, House Report No. 97.730, p.42.

21. Part V of the Report and Order is devoted to local broadcasting issues.

22. "Court Approves Satellite TV Service," New York Times, July 25, 1984, p.C22.

23. Ibid.

24. See FCC, Policies Report, op. cit., p.1-5 and p.70 for the discussion of relationship between market structure and broadcast regulations.

25. Ibid., p.83.

26. "Support Of Satellite-To-Home TV Service By President Is A Blow To Major Networks," loc. cit.

27. Reprinted in DBS Hearing, op. cit., p.4.

28. Ibid., p.39.

29. Ibid., p.191-200.

30. Ibid., p.198.

31. Ibid., p.199 and p.215.

32. FCC, Notice, op. cit., Paragraph 60.

33. DBS Hearing, op. cit., p.326-369.

34. Ibid., p.43.

35. Ibid., p.44.

36. FCC, Notice, Sentence 27.

37. DBS Hearing, op. cit., p.43.

38. FCC, Report and Order, op. cit., Sentence 67.

39. Mosco, V. Pushbutton Fantasies, Norwood, NJ: Ablex Publishing, 1982, p.19-23.

40. Ibid., p.37.

41. Ibid., p.23-60.

42. This cutoff procedure was discussed in the FCC's Memorandum Opinion and Order, General Docket No. 80-603, October 22, 1981.

43. They are Advance Inc., Focus Broadcast Satellite, Home Broadcasting Television Partners, National Christian Network, Satellite Development Trust, and Unitel Corporation. STC filed that applications of these companies not to be considered and the request was granted by the FCC. Later these companies filed petitions for reconsideration of ruling but were denied. See FCC, Memorandum Opinion and Order, General Docket No. 80-603, Ocbober 22, 1981, and February 18, 1982.

44. Sources: Hearings on Cable Telecommunications Act of 1983 before the Subcommittee on Communications, U.S. Senate, 98th Congress, First Session, February 16 and 17, 1983, and "Good News, Bad News in DBS Spacerush," Broadcasting, loc. cit.

45. Statement of Irving Goldstein, president of STC, before the DBS Hearing, op. cit., p.30.

46. One of STC's channels, called "superstar" would offer major motion pictures, popular concerts, Broadway shows and family entertainment 24 hours a day. And the other two channels would operate 15 hours daily providing film classics, children's programming, variety, performing arts and cultural attractions, public affairs, minority oriented programming, adult education, sports, theatrical productions and special interest programming. See Ibid., p.31.

47. Ibid., p.32.

48. "Good news, Bad news in DBS Spacerush," op. cit., p.24.

49. Ibid., p.26.

50. Ibid., p.24, p.27.

51. Currently television in the United States operates with 525 lines for a television picture. On the other hand, HDTV operates with a system of 1125 lines. As a result, the picture definition is improved, especially when the picture is projected onto a large screen.

52. For details of CBS's HDTV proposal, see Statement by Joseph Flaherty, vice president, Engineering and Development, CBS, before the DBS Hearing, op. cit., p.109-139.

53. "FCC Approves 4 Firms for Satellite TV," Aviation Week, October 15, 1984, p.22.

54. "Satellite Supply and Demand Laws Benefiting Users," Broadcasting, July 8, 1985, p.46.

55. "FCC Approves 4 Firms for Satellite TV," loc. cit.

56. "Satellite-To-Home TV Starting Up," Washington Post, January 26, 1984, p.E1-2.

57. "United Satellits Seek $40 Million In Drive To Expand Direct-Broadcast TV Services," Wall Street Journal, February, 22, 1984, p.10.

58. "Comsat Starts Reorganizing Its STC Unit," Washington Post, October 3, 1984, p.F1.

59. "Station Shutdown Leaves TVs Blank," Washington Post, April, 5, 1985, p.C10.

60. USCI operated from a medium-powered satellite (40-50 watts per channel) that required a larger receiving dish. There is a inverse relationship between the power of satellite and the size of receiving dish. According to other DBS licensees' prooposals, downlink power ranges from 100 to 400 watts so that the size of a receiving dish is smaller.

61. "Comsat, Citing Risks, Ends Negotiations With Prudential On Satellite-TV Venture," Wall Street Journal, December, 3, 1984, p.51.

62. "Comsat Drops Plans for DBS Network," Washington Post, December 1, 1984, p.G1.

63. "Comsat, Citing Risks,....," loc. cit.

64. Statement of Stephen Lukasik, chief scientist of FCC, quoted in DBS Hearing, op. cit., p.221.

65. "At Last, Firms May be Ripe For Private Satellite Networks," Wall Street Journal, April 19, 1985, p.31.

66. "The Search For Ubiquity in TV," Broadcasting, July 5, 1985, p.52.

67. "RCA Backs Away From Plan to Launch High-Powered Direct Broadcast Satellites," Wall Street Journal, July 12, 1984, p.12.

68. Statement of a CBS Spokesman, quoted in "Cracked Dishes: DBS's Doom," Newsweek, July 23, 1984, p.58.

69. Hearings on Cable Telecommunications Act of 1983, op. cit., p.82.

70. Statement of Irving Goldstein, president of STC, before the DBS Hearing, op. cit., p.39.

71. FCC. Policies Report, op. cit., p.2-3.

72. Carey, J. W. and Quirk, J. J. "The Mythos of the Electronic Revolution," The American Scholar, 1970, 39, p.415.

73. Ellul, J. "The Technological Order," Technology and Culture, 1962, 3, p.394.

74. Pool, I. de Sola. "The Rise of Communication Policy Research," Journal of Communication, 1974, 24(2), p.39-40.

75. Mosco, op. cit., p.45.

76. Homet, R. S. Jr. Politics, Cultures and Communication, NY: Praeger Publishers, 1979, p.51.

77. National Telecommunications and Information Administration, Direct Broadcasting Satellite: Policies, Prospects and Potential Competition, Washington D.C.: GPO, 1981, p.15.

78. For example, FCC, Policies Report, op. cit.

79. For example, Frank N. Magid Associates, "Attitudes Toward Direct Broadcast By Satellite," Prepared for USSB, reprinted in DBS Hearing, op. cit., p.71-80.

80. For court cases, see Cole, P. "The Promising Future of Direct Broadcast Satellites in America: Truth or Consequences?" Federal Communications Law Journal, 1981, 33(2), 221-243.

81. Similar experience in Canada is discussed in Mansell, R. E. "Is Policy Research is Irrelevant Exercise?: The Case of Canadian DBS Planning," Journal of Communication, 1985, 35(2), 154-166.

82. Slack, op. cit., p.18.

83. Le Duc, D. R. "Deregulation and The Dream of Diversity," Journal of Communication, 1982, 32(4), p.173.

84. Williams, R. Television: Technology and Cultural Form, NY: Schocken Books, 1975, p.25.

85. Ibid.